



LANCOM Systems

LANCOM Certified Specialist
August 2011

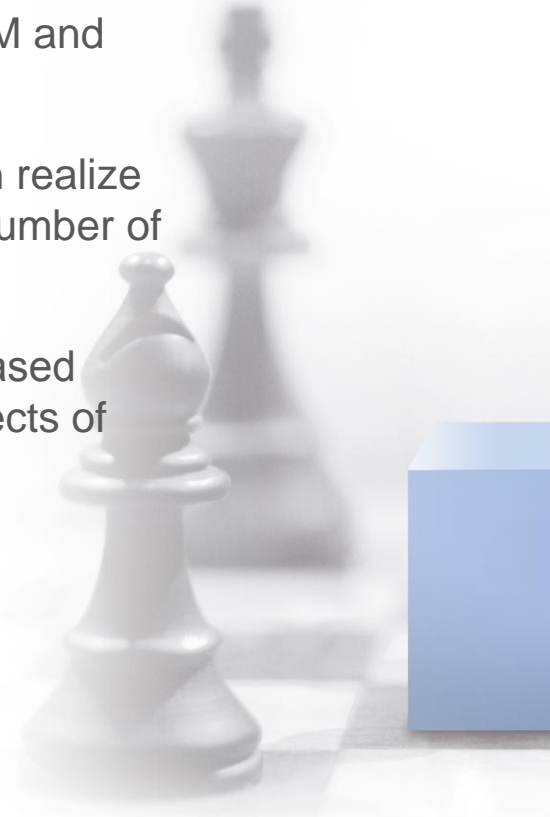
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LANCOM
Systems

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- Certification evaluates the expert knowledge that system administrators, IT resellers and consultants have in LANCOM and networking-related issues.
- Certification allows you to identify qualified partners who can realize complex scenarios under time pressure and increases the number of requests for consultation and local support.
- This certification program is LANCOM's answer to the increased demand for expert LANCOM specialists who cover the subjects of
 - Network Connectivity
 - WLAN



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Advantages of LANCOM certification

- **Quality standard**
 - A LANCOM certificate documents theoretical and practical technical expertise regarding LANCOM products.
- **Personal advantage**
 - LANCOM certification is a personal qualification.
- **Visibility**
 - As a LANCOM Certified Specialist, you will be listed in LANCOM's online "Where to buy"- directory of sources.
- **Value-added for LANCOM partners**
 - LANCOM partners with the partner logo additionally receive a certificate logo, which is also visible in the "Where to Buy"- directory.
- **Competitive advantage**
 - LANCOM certification offers new opportunities for sales. As our trusted technical contact person, we will list you in our highly visible LANCOM On-Site Service & Support Internet listing.



To whom is certification intended for?

Certification is intended for users familiar with LANCOM and who can realize complex scenarios under time pressure.

Certification as a LANCOM Certified Specialist requires extensive experience with the options of manual configuration of LANCOM products.

The webinars provide information on configuration options outside the scope of the Setup Wizards and, as such, they are highly recommended as an additional preparation for certification.

Certification is primarily intended for:

- **System vendors** offering value-added services and solutions.
- **Specialist resellers** who profit from demonstrable technical knowledge and can increase product sales.
- **IT consultants** specializing in: IT security, WLAN, and VPN
- **IT administrators** who work with LANCOM routers and access points

- Examination for the LANCOM Certified Specialist qualification generally takes place after a series of LANCOM Webinars. Information about upcoming webinars is available on our website (www.lancom.eu/training) and by newsletter.
- Subjects for examination: Demonstration of profound general LANCOM experience, the newly acquired knowledge from the current webinars, and the ability to configure LANCOM devices with the latest LCOS operating systems by:
 1. Theoretical examination (multiple choice)
 2. Practical examination (configuration task)



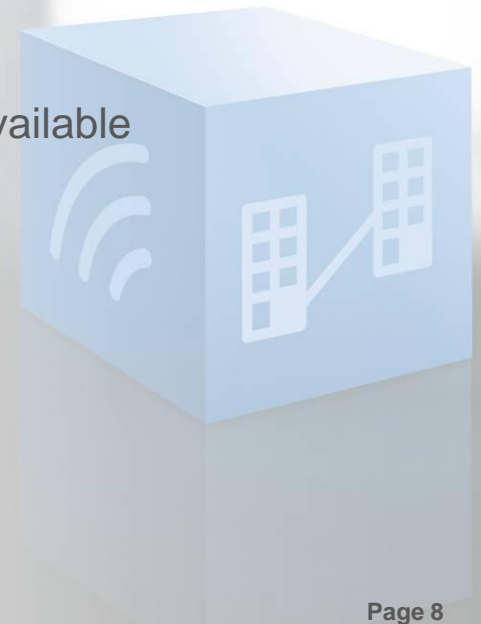
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Certification procedure

- LANCOM offers two different qualifications/certifications (each consisting of theoretical and practical tasks).
 1. Network Connectivity Qualification
 2. WLAN Qualification
- The following certificates are available:
 - LANCOM Certified Specialist / NC (Network Connectivity)
 - LANCOM Certified Specialist WLAN
- Examination results are sent by email the following day
- Take the opportunity and get LANCOM certified
- If you have any questions, please send them to training@lancom.de



- Each part of the examination includes its own theoretical examination.
- Questions are answered either by multiple choice or by entering a numerical value (no free-text answers)
- In some cases, several answers are correct (the number of correct answers is given)
- Depending on the degree of difficulty, the number of points available for each question differs (between 1 and 3 points)



Theoretical examination procedure

- Incorrect answers within a question are deducted from correct answers.
 - A question cannot be rated negatively (i.e. there are no minus points)
 - Partial points are counted
 - Example: a question has 2 correct answers and 3 points
 - 2 answers correct: 3 points
 - 1 answer correct: 1.5 points
 - 1 answer correct and 1 wrong: 0 points
 - 2 answers wrong: 0 points
- At least 60% of points for each part of the examination are required for a pass.
- Theoretical parts and the practical parts of the examination must each be passed with at least 60% of the points.



- For each practical examination a configuration task is to be carried out, such as the configuration of a firewall, Internet access, a WLAN or of a VPN connection, for example.
- These tasks are carried out online on a LANCOM router/access point
- These partial configurations are to be carried out **manually** (without Wizards) with the aid of LANconfig
- This partial configuration is evaluated and points awarded
- 60% of the points are required for a pass



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Overview



**LANCOM
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Qualification

Network Connectivity

Extensive knowledge of networking , network administration, TCP/IP, firewall, routing, management of VPN, e.g. tunneling, site to site, client connection etc.

LCS-NC

WLAN Qualification

Extensive knowledge of wireless networking, e.g. IEEE standards, WLAN security, Multi-SSID

LCS-WLAN

Sample questions from the theoretical examination

NC (network connectivity)

- Where does the number of the incoming call (calling line identification) have to be stored for the number to be recognized? (1 answer)
 - Communication → Call Management → Incoming numbers
 - Communication → Call Management → Calling line identification
 - Communication → Remote Sites → Remote sites (ISDN/serial)
 - Communication → Call Management → Number list

- Which administrator groups (access rights) are available for selection? (1 answer)
 - Supervisor, Admin-RW, Admin-RO, Admin-RO-Limit, none
 - Supervisor, Admin-RW, Admin-RO
 - Supervisor, Admin-RO, Admin-RO-Limit, none
 - Admin-RW, Admin-RO



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Sample questions from the theoretical examination

NC (network connectivity)

■ What output generates a VPN status trace? (2 answers)

- [-] 2005/07/05 12:11:39,180
IKE info: Phase-1 negotiation started for peer TEST rule isakmp-peer-TEST using MAIN mode
- [-] 2005/07/05 12:11:39,480
IKE info: The remote server 80.137.68.143:500 peer TEST id <no_id> negotiated rfc-3706-dead-peer-detection
- [-] 2005/07/05 12:11:39,480
IKE info: Phase-1 remote proposal 1 for peer TEST matched with local proposal 1
- [-] 2005/07/05 12:18:21,530
encrypted: 82.83.243.6->213.217.69.78 152 ESP spi[2794ca8e]
- [-] 2005/07/05 12:18:21,540
for send: 10.98.100.101->10.1.201.196 652 TCP port 23->1591
- [-] 2005/07/05 12:18:21,540
encap: 10.98.100.101->10.1.201.196 652 TCP port 23->1591
- [-] 2005/07/05 12:11:39,180
Peer: TEST -> Mode: Active with SH-Time: 9999
- [-] 2005/07/05 12:11:39,480
Peer: TEST -> Remote-GW: 80.137.68.143 with Crypt-Alg: AES, Crypt-Length: 128, Hash-Alg: HMAC_MD5
- [-] 2005/07/05 12:11:39,480
Peer: TEST -> State: Connection with Last-Error: (none)
- [-] 2005/07/05 12:11:16,780
VPN: poll timeout for TEST (80.137.68.143)
remote site answered during interval
send poll frame to 10.98.2.17
- [-] 2005/07/05 12:11:16,860
VPN: Poll reply from TEST (80.137.68.143)



Sample questions from the theoretical examination

NC (network connectivity)

- Which mechanisms can be used for permanent checks on an existing IPsec connection? (3 answers)
 - DPD (Dead Peer Detection)
 - ICMP-Polling
 - LCP-Polling
 - IKE config mode



Sample questions from the theoretical examination

WLAN

- What prevents the setting “Closed Network”? (2 answers)
 - Registration of undefined WLAN-client MAC addresses
 - Registration of a WLAN client with the SSID “Any” in the WLAN
 - SSID querying during a WLAN network search
 - The transmission of SSID in data and management frames

- Which standard describes WEP64? (1 answer)
 - 802.11
 - 802.11b
 - 802.11g
 - RFC 3580

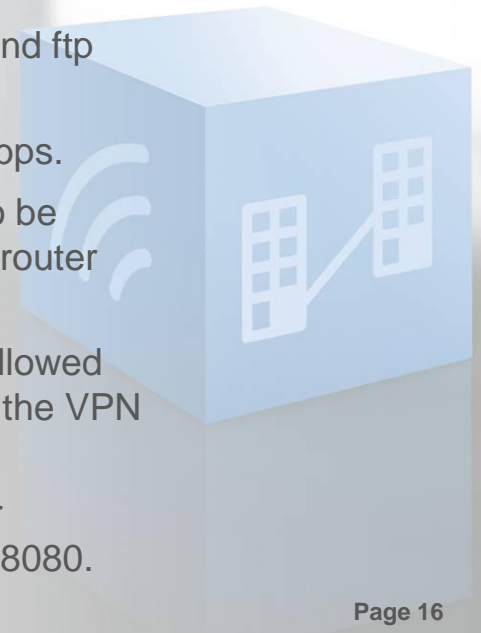


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Sample questions from the practical examination

NC (network connectivity)

- Carry out the configuration of the firewall and the routing module according to the requirements (specification) listed below with the help of LANconfig.
- Specifications:
 - Communications with the Internet are to function with http, https and ftp only.
 - The service FTP is to be limited to a global download limit of 64 kbps.
 - Name resolution (DNS) in the Internet for all local clients is only to be provided via the LANCOM router as a DNS server (the LANCOM router functions as a DNS forwarder).
 - Communication with the network 192.168.200.0/24 (via VPN) is allowed via any service and is to be subject to no limitations (assume that the VPN connection is working and can be described simply as "VPN")
 - An internal Web server (192.168.x.100), internally the Web server responds to port 80, is to be reachable from the outside over port 8080.



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Sample questions from the practical examination

NC (network connectivity)

- Carry out the configuration of a VPN connection to headquarters with LANconfig.
- Set up the VPN connection with the help of the following information:
 - The VPN gateway at headquarters has the IP address: 82.82.82.1
 - Target network is 192.168.10.0/24
 - Phase 1:
 - IKE Exchange: Main mode
 - Preshared key: ZertLCSx (where x is the number of your workplace)
 - IKE Group: 2
 - Blowfish with 448 bits
 - MD5
 - Validity period: 86,400 sec., 0 kBytes
 - Phase 2:
 - Tunnel
 - ESP
 - PFS Group: disabled
 - AES with 256 bits
 - HMAC-MD5
 - No IPCOMP
 - Validity period: 2,000 sec., 200,000 kBytes



Sample questions from the practical examination

WLAN

- Carry out the configuration of the access point according to the conditions/requirements with the help of LANconfig.
- Conditions/requirements:
 - The clients operate with 802.11b and 802.11g.
 - The base station should choose between channels 3, 7 and 11.
 - The 802.11b clients support WEP128 encryption only. Consequently, WEP128 encryption is to be set up on the access point for these clients.
 - The 802.11g clients support 802.11i encryption. Consequently, 802.11i encryption is to be set up on the access point for these clients.
 - The 802.11g client with the MAC address 000e351bc7bf is to receive its own personal passphrase (LEPS) for the 802.11i encryption.



Thank you for your Attention!

More information...

For more information on our products, services and solutions, please visit:

www.lancom.eu

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